ASPEN APARTMENTS (PWS #4010089)
SOURCE WATER ASSESSMENT OPERATOR FINAL REPORT

May 13, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. The assessment for your particular system is based on a land use inventory of the designated source water area, sensitivity factors associated with each well, and characteristics of the aquifer that supplies your community with drinking water.

This report, *Source Water Assessment for the Aspen Apartments, located in Boise, Idaho,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within those boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Aspen Apartments (PWS #4010089) drinking water system consists of two source water wells. Both wells rated an overall high susceptibility to inorganic, volatile organic, synthetic organic and microbial contaminants. This rating is due, in large part, to the large number of potential contaminant sources within the Zone 1 or three-year time of travel zone.

Well #1 has recorded the presence of the synthetic organic contaminant atrazine in a single test in 1997. The inorganic compound Arsenic has also been detected a number of times at a level that would now exceed the recently revised maximum contaminant level (MCL) of 10 parts per billion (ppb). Additionally, the water system has experienced a number of bacteria hits, but these hits have always been in the distribution system and not in the source water. Although contaminant levels with the exception of Arsenic in the drinking water system have never exceeded current maximum contaminant levels (MCLs) for any of the pollutants regulated under the Safe Drinking Water Act, the Aspen Apartments should be aware that the potential for contamination still exists.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Aspen Apartments, drinking water protection activities should focus on repairing any deficiencies noted in the sanitary survey. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use. There should also be a focus on implementation of practices aimed at minimizing the leaching of chemicals associated with agricultural land within the designated source water area. In addition, land uses within portions of the source water assessment area are beyond the direct jurisdiction of the Aspen Apartments. Therefore, partnerships with state and local agencies should be established to ensure future land uses within the delineated capture zone are protective of ground water quality.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan, especially since the delineation contains both urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation, to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. In addition, since a number of major transportation corridors passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community should incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, water conservation, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality at 373-0550 or the Idaho Rural Water Association at 1-800-962-3257.

SOURCE WATER ASSESSMENT FOR THE ASPEN APARTMENTS, BOISE, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are contained in this report (Attachment A). The list of significant potential contaminant source categories and their rankings used to develop the assessment is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess each drinking water source in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act Amendments of 1996. This assessment is based on a land use inventory of the delineated source water area, sensitivity factors associated with each well, and aquifer characteristics. Since there are over 2,900 public water sources in Idaho, there is limited time and resources available to accomplish the assessments. All of these assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Aspen Apartments has a community public drinking water system serving approximately 75 people that is located in Ada County just west of Interstate 84 near Boise, Idaho (Figure 1). Residents receive their water from two wells.

The primary water quality issues currently facing the Aspen Apartments is the recent repeat detection of total coliform bacteria within the distribution system and the level of the inorganic compound Arsenic.

No VOCs have ever been discovered in any routine water sample. However, the SOC Atrazine was detected in a single sample in March of 1997. The IOCs barium, cadmium, fluoride, selenium, and nitrate have been detected in the drinking water supply, but at levels safely below each respective MCL as established by the EPA. Nitrate levels have been extremely low, averaging just 2.0 parts per million (ppm) since 1993. The MCL for nitrate is 10.0 ppm. Water samples analyzed for arsenic revealed a concentration of 11-28 ppb. This level was safely below the MCL for arsenic, which was 50 ppb. However, the EPA recently lowered the MCL for arsenic from 50 ppb to 10 ppb (October 31, 2001), requiring all water systems to comply with the new standard by 2006. The Aspen Apartments may want to further investigate any practices that can be implemented to reduce arsenic levels in their drinking water, thereby avoiding a MCL violation.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (regions indicating the number of years necessary for a particle of water to reach a pumping well) for water in the aquifer. DEQ contracted with BARR Engineering to perform the delineations using a combination of MODFLOW and a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Boise Valley aquifer. The computer model used site specific data, assimilated by BARR Engineering from a variety of sources including area well logs, the Treasure Valley Hydrologic Project, and hydrogeologic reports (detailed below in Section 3).

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with these possible contamination sources, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in May of 2001. The first phase involved identifying and documenting potential contaminant sources within Aspen Apartments source water assessment area (Attachment A, Figure 2) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the system operator to validate the sources identified in phase one and to add any other potential sources in the area.

The delineated source water area contains some 517 potential contaminant sources ranging including, but not limited to gas stations, leather processors, recyclers, and gravel pits to main but a few.

Section 3. Hydrologic Conditions of the Treasure Valley

Treasure Valley Hydrologic Project Information (Petrich and Urban, 1996; Neely and Crockett, 1998; Petrich et al., 1999)

The "Treasure Valley" is a geopolitical region that includes the lower Boise River sub-basin. The lower Boise River sub-basin begins where the Boise River exits the mountains near the Lucky Peak Reservoir. From Lucky Peak Dam the lower Boise River flows about 64 (river) miles northwestward through the Treasure Valley to its confluence with the Snake River. The Treasure Valley Hydrologic Project area encompasses the lower Boise River area, and extends south to the Snake River. The southern area is included in the study area because of ground water flow from the Lower Boise River basin south toward the Snake River.

Significant amounts of desert area were converted to flood irrigated agriculture beginning in the 1860s. Irrigation led to increases in shallow ground water levels in some regions. These shallow ground water levels provided an inexpensive and readily obtainable source of water supply that is used extensively throughout the valley. Much of the population growth in the Treasure Valley has been occurring in previously flood-irrigated agricultural areas, resulting in increased pumpage and a reduction in local aquifer recharge. In addition, irrigation in some areas has become more efficient, reducing the amount of irrigation-related infiltration. Decreasing aquifer recharge and increasing pumpage is thought to be contributing to the decline of ground water levels in some areas.

The Treasure Valley experiences a temperate and arid-to-semiarid climate. Average high temperatures range from about 90°F in summer to 36°F in winter; low temperatures range from about 20°F in winter to about 56°F in summer. The average precipitation ranges from about 8 to 14 inches throughout most of the valley, most of which falls during the colder months in the form of snow in higher elevations and rain in the low-lying valleys.

Major surface water bodies include the Boise River, Lake Lowell, and Lucky Peak Reservoir. The primary source of surface water in the Treasure Valley is the high elevation area in the Boise River basin upstream of Lucky Peak Dam. Much of the spring runoff from the snow pack in high elevation areas is stored in three reservoirs: Anderson Ranch Reservoir, Arrowrock Reservoir, and Lucky Peak Reservoir.

Regional cropland is irrigated primarily with surface water through an extensive network of reservoirs and canals. The first canals were constructed in the 1860's; there are now over 1,100 miles of major and intermediate canals in the Treasure Valley, the majority of which are owned and maintained by canal companies and irrigation districts. Primary sources of irrigation water in the Treasure Valley include the Boise, Snake, and Payette Rivers.

Hydrogeology (from Petrich et al., 1999)

The lower Boise River sub-basin (Treasure Valley) is located within the northwest-trending topographic depression known as the western Snake River Plain. The western Snake River Plain is a relatively flat lowland separating Cretaceous granitic mountains of west-central Idaho from the granitic/volcanic Owyhee mountains in southwestern Idaho. The western Snake River Plain extends from about Twin Falls, Idaho northwestward to Vale, Oregon. The Snake River Plain is about 30 miles wide in the section containing the lower Boise River.

Historically, sediments originating from the surrounding mountains began accumulating on top of thick, basal basalts. Rifting and continued subsidence maintained the lowland topography, leading to the additional accumulation of water and sediments (Othberg, 1994). Basin infilling by sediments and basalt occurred from the late Miocene through the late Pliocene (Othberg, 1994). Incision caused by flowing water in major drainages (e.g., Snake and Boise Rivers) began in the late Pliocene or early Pleistocene, although deposition of coarse sediments continued during Quaternary glaciations (Othberg, 1994).

Several Quaternary basalt flows have been described in the western Snake River Plain, and have been assigned to the upper Snake River Group (Malde, 1991; Malde and Powers, 1962). Lava flowed across portions of the ancestral Snake River Valley (Malde, 1991) in an area that is now south of the Boise River. The Snake River then changed course, incising at its present location along the southern margin of the basalt flows. More recent eruptions (from Kuna Butte and other local sources) spilled lava into the canyon south of Melba. The Snake River has since incised this basalt (Malde, 1991).

The general stratigraphy of the western Snake River Plain consists of (from top to bottom) a thick layer of sedimentary deposits underlain by a thick series of basalt flows, which in turn are underlain by older, tuffaceous sediments and basalt (Malde, 1991; Clemens, 1993). The upper thick zone of sediments (up to approximately 6,000 feet thick) distinguishes the western Snake River Plain from the eastern Snake River Plain, in which the upper section is primarily Quaternary basalt (Wood and Anderson, 1981).

The uppermost sediments and basalt belong to the Pleistocene-age Snake River Group. The Snake River Group consists of terrace sediments, Quaternary alluvium, and Pleistocene basalt flows (Wood and Anderson, 1981). Snake River Group sediments and basalts cover much of the project area (Othberg and Stanford, 1992).

The Snake River Group overlies the Idaho Group sediments. The Idaho Group sediments can be divided into two general parts (Wood and Anderson, 1981). The lower Idaho Group contains sediments described as lake and stream deposits of buff white, brown, and gray sand, silt, clay, diatomite, numerous thin beds of vitric ash, and some basaltic tuffs. The upper part of the lower Idaho Group also contains some local, thin, basalt flows. The upper Idaho Group consists of sands, claystones, and

siltstones, but differs from the lower Idaho Group in that it contains a greater percentage of coarser-grained materials. The upper Idaho Group sediments are associated with a fluvial/deltaic/lacustrine depositional environment; the lower Idaho Group sediments were deposited in more of a lacustrine/deltaic environment (Wood, 1994).

Wood (1994) identified a buried lacustrine delta within the Idaho Group sediments in the Nampa-Caldwell area. The location of the delta in the middle of the western Snake River Plain suggests that the eastern part of the Boise River basin was delta plain and flood plain at the time of deposition, while the western part was a deep lake environment. The delta probably prograded northwestward into a lake basin 830 feet deep, based upon high resolution seismic reflection data and resistivity log interpretations. The delta-plain and front sediments were shown to be mostly fine-grained, well-sorted sand with thin layers of mud (Wood, 1994). The northwest trend of the delta indicates a sediment source to the southeast, such as where the Snake River flows today (Wood, 1994).

A substantial, laterally extensive layer of clay is found at depths of 300 to 700 feet below ground surface. The clay is important because it represents, in some areas, a significant aquitard separating shallow overlying aquifers from deeper zones. The clay, often described in well logs as having a blue or gray color, has been observed as far west as Parma, and as far east as Boise (although the clay is not found in the extreme eastern portions of the Treasure Valley). The clay varies from a few feet to a few hundred feet in thickness. Although significant layers of clay are present throughout the Idaho Group sediments, individual clay units are not necessarily continuous over large areas. Also, the top of the clay can vary in elevation by up to approximately 200 feet in some locations, such as in an area west of Lake Lowell. In general, sediments above the “blue clay” are coarser-grained than the interbedded sands, silts, and clays underlying the “blue clay.”

The top of the upper Idaho Group is marked in several parts of the Treasure Valley by a widespread fluvial gravel deposit known as the Tenmile gravels. Tenmile gravels contain rounded granitic rocks and felsic porphyries originating from the Idaho Batholith to the north and northeast. The Tenmile gravels range up to 500 feet in thickness along the Tenmile Ridge south of Boise, but are less than 50 feet thick in the Nampa-Caldwell area (Wood and Anderson, 1981).

Aquifer Systems and Hydrogeologic Characteristics

Ground water for municipal, industrial, rural domestic, and irrigation uses in the Treasure Valley is drawn almost entirely from Snake River Group and Idaho Group aquifers. Many domestic wells draw water from shallow aquifers, such as those in the Snake River Group deposits. Larger production wells (for municipal and agricultural uses) draw water from the deeper Idaho Group sediments.

Aquifers contained in the Snake River and Idaho Group sediments comprise shallow and regional ground water flow systems. Shallow aquifers contained in Snake River Group sediments and basalts may belong to local flow systems. Most local flow system recharge stems from irrigation infiltration and channel (e.g., streams or canals) losses. Discharge from shallow, local flow systems often is to local drains or streams. The time from recharge to discharge in shallow flow systems (residence times) probably ranges from days to tens of years.

In contrast, regional ground water flow systems extend much deeper than local flow systems. The Treasure Valley regional flow system begins in the eastern part of the valley, as indicated by downward hydraulic gradients in the Boise Fan sediments (Squires et al., 1992). Some water also enters the regional flow system as underflow from the Boise Foothills in the northeastern part of the valley. The

regional flow system is thought to discharge primarily to the Boise and Snake Rivers in the western and southwestern parts of the valley.

Aquifer material characteristics, material heterogeneity, and structural controls influence Treasure Valley ground water flow. Coarse-grained materials (e.g., sand and gravel) in upper zones are more capable of transmitting ground water than fine-grained sediments (e.g., silt and clay). Clay and silt in the Snake River sediments can restrict vertical and/or horizontal ground water movement. Perched aquifers are created when fine-grained lenses impede downward vertical flow. A distinctive clay layer, sometimes referred to as "blue clay," is present over large portions of the valley. The clay is absent in the easternmost portions of the lower Boise River Basin, but can reach a thickness of more than 200 feet toward the central and western portions of the basin.

Sequences of interbedded sand, silt, and clay, such as the Deer Flat Surface and the upper portion of the Glenns Ferry Formation of the upper Idaho Group in the Nampa-Caldwell area, are the major water-producing aquifers in a large part of Canyon County (Anderson and Wood, 1981). The coarse-grained sediments in this zone produce water in excess of 2,000 gallons per minute (gpm).

The delineated source water assessment area for the Aspen Apartments can best be described as an eastward trending corridor approximately 5 miles long and 2 mile wide at its widest (Attachment A, Figure 2a-2e). The actual data used by BARR Engineering in determining the source water zones of contribution are available from DEQ upon request.

Section 4. Susceptibility Analysis

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment B contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: 1) the surface soil composition, 2) the material in the vadose zone (region between the land surface and the water table), 3) the depth to first ground water, and 4) the presence of a 50-foot thick impermeable zone above the production interval of the well. Slowly draining fine-grained soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. For Aspen Apartments, regional soil information indicates the presence of moderately to well-drained soils in the vicinity. These soils may not provide adequate protection to the source water by impeding the downward progress of contaminants in the unlikely event of a spill or release near the well bore. As such, the hydrologic sensitivity was rated as high for both wells (Table 2).

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have a better buffering capacity. In addition, if the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less probable. Also, if the wellhead is protected from surface flooding and is outside the 100-year floodplain, then the likelihood of contamination from surface events is reduced. A well log was available for one of the Aspen Apartments wells. The copy quality is poor and file notes indicate that it belongs to well #1. The well information provided is summarized below.

Table 1. Aspen Apartments Well Construction Summary Information

Well	Well Depth (ft)	Static Water Depth (ft)	Casing: diameter/ thickness (in)	Casing: Depth (ft)/ formation completed in	Surface seal: depth (ft)/ formation completed in	Screened Interval (ft)	Drill Year	Sanitary Survey Elements (A/B) [1]
Well #1	110	19	6/0.25	110/White Sand	20/Gravel	107-110	1970	Y/Y

[1] A = Well and surface seal in compliance; B = Protected from surface flooding
NI = no information was available

The available well log allowed a determination as to whether the well meets current public water system (PWS) construction standards. Although the well may have been in compliance with all regulations when it was completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of 0.322-inches. Ten-inch casing requires 0.365-inch thick casing, and 12-inch and larger casing requires a casing thickness of at least 0.375-inches. Well #1 used 0.25-inch thick casing and therefore does not comply with the current construction standards that require 0.280-inch wall thickness. The overall well construction rating for both wells was moderate.

Potential Contaminant Source and Land Use

The well rated low for microbial contamination, moderate for IOC and SOC contaminants and high for VOCs. This rating in part is due to the significant number of potential contaminant sources, which can be found in the three-year time of travel zone.

Final Susceptibility Ranking

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a repeat detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, potential contaminant sources within 50 feet of a wellhead will lead to an

automatically high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Additionally, having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) contributed to the overall ranking. The Aspen Apartments water system rated a high overall susceptibility to IOCs, VOCs, SOCs, and microbial contaminants (Table 2).

Table 2. Summary of the Aspen Apartments Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	M	H	M	L	M	H	H	H*	H
Well #2	H	M	H	M	L	M	H	H	H	H

H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* - Automatic high rating due to the detection of the SOC Atrazine

Susceptibility Summary

A moderate hydrologic sensitivity and high system construction combined to give the well a high overall rating for all contaminants. Additionally, a large number of potential contaminant sources exist in the 3-year TOT zone. With the exception of Arsenic, there are no significant water chemistry problems in the ground water. No VOCs have ever been detected in the well water. However, the SOC atrazine was detected resulting in an automatic high susceptibility rating.

Section 5. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Aspen Apartments, drinking water protection activities should first focus on continued maintenance of the sanitary seal and distribution system. Actions should also be taken to keep a 50-foot radius circle clear around the wellhead. Any spills occurring on Interstate 84 should be monitored and dealt with expeditiously. Because a portion of the ground water capture zone is outside the direct jurisdiction of the Aspen Apartments, the creation of partnerships with state and local agencies and industry groups are critical to the success of drinking water protection. Should microbial contamination become a problem, appropriate disinfection practices would need to be implemented to ensure the health of the Aspen Apartments residents.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan, especially since the delineation contains some urban and residential land uses public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. In addition, because a major transportation corridor (Interstate 84) passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office (208) 373-0550

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harperr, Idaho Rural Water Association, at (208) 373-7001 (mharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

Delineation Figures and Potential Contaminant Source Tables for Aspen Apartments

FIGURE 1: Geographic Location of the Aspen Apartments

PWS# 4010089

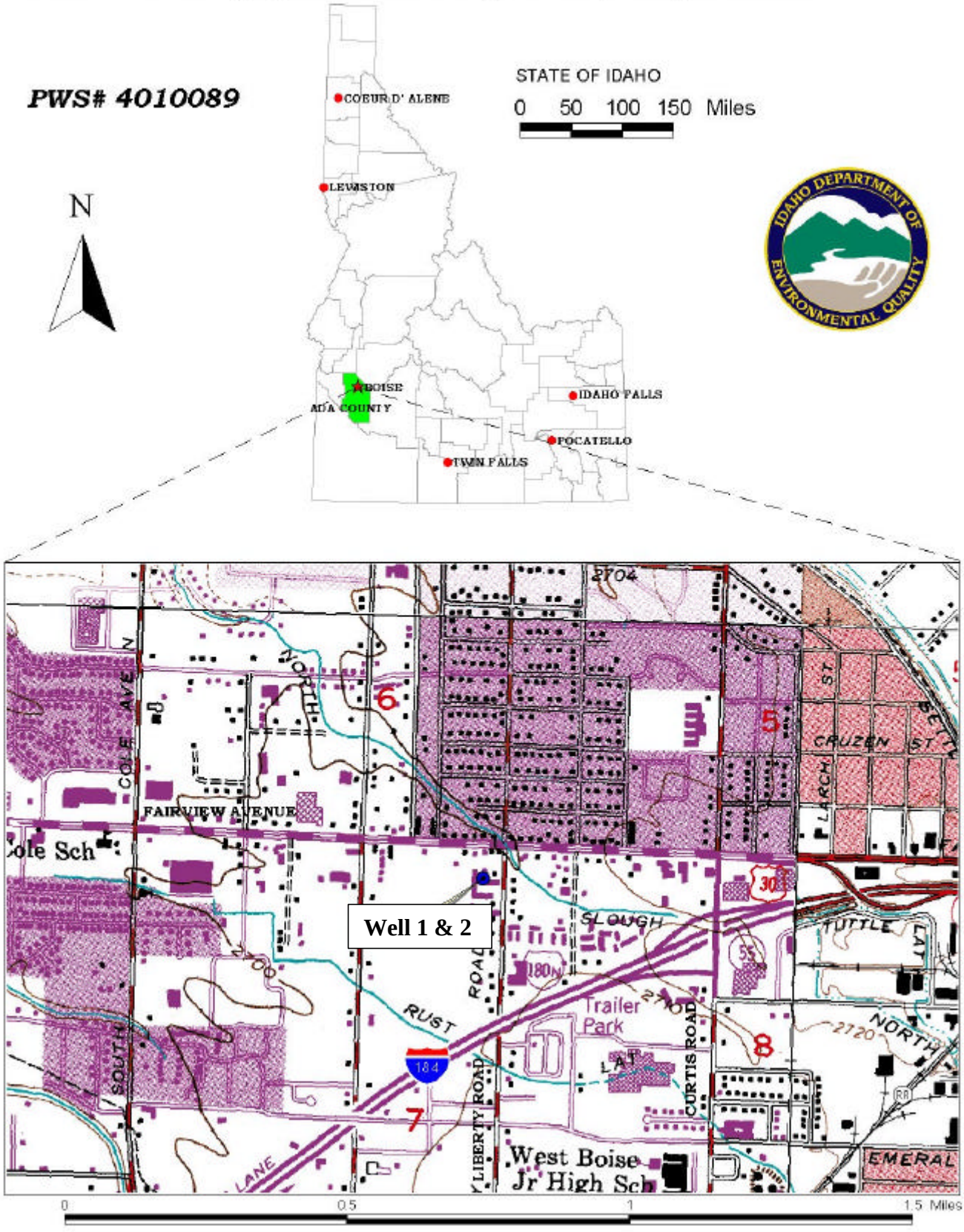
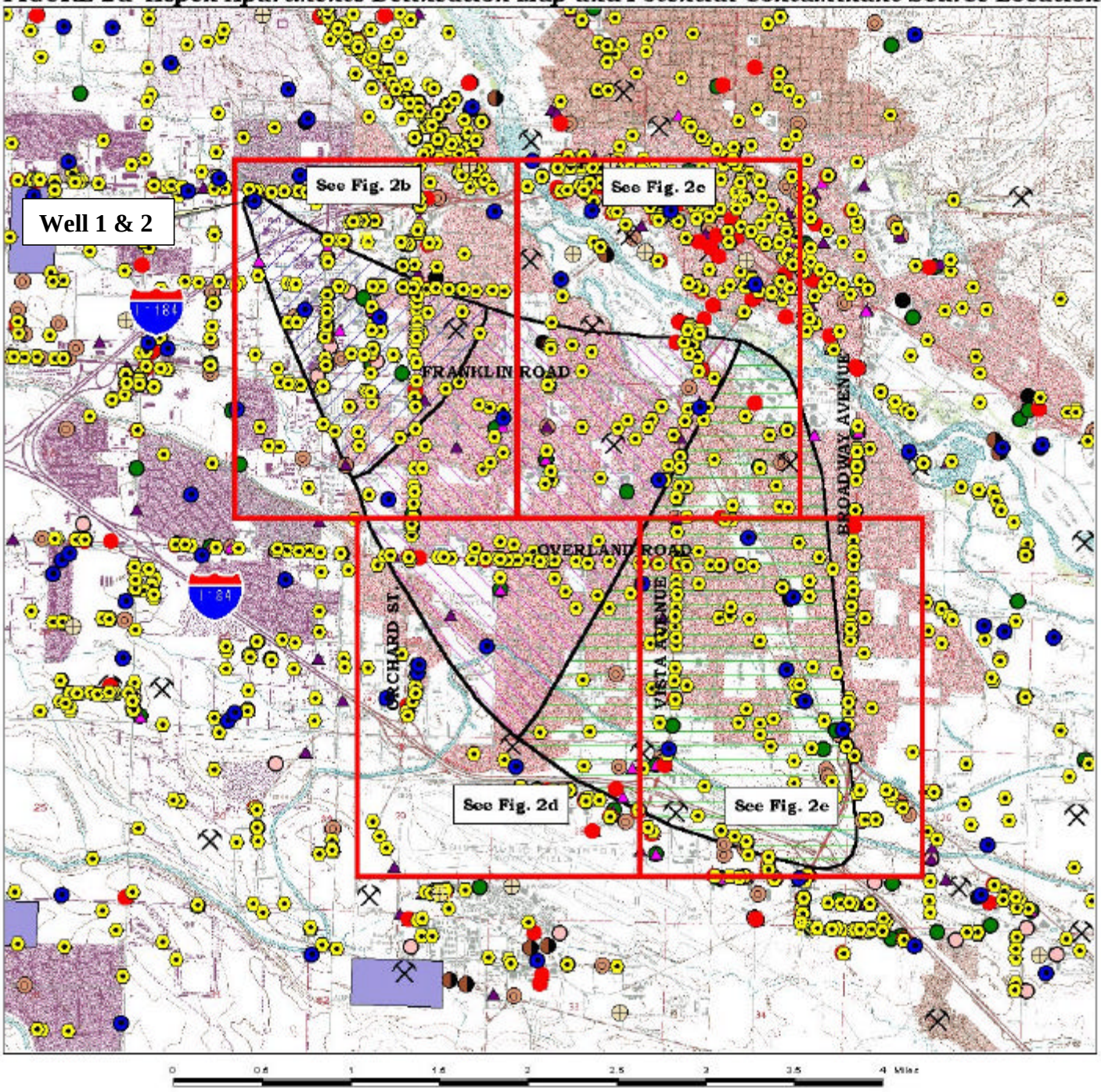


FIGURE 2a- Aspen Apartments Delineation Map and Potential Contaminant Source Locations



LEGEND

Time of Travel Zones
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- Toxic Release Inventory
- CERCLIS Site
- RICRIS Site
- Business Mailing List
- Dairy
- LUST Site
- NPDES Site
- Mine
- AST

UST Site
- Closed
- Open
- Recharge Point
- SARA Title III Site (EPCRA)
- Injection Well
- Group1 Site
- Cyanide Site
- Landfill
- Wastewater Land App.Site

N

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 4010089

Well 1 & 2

FIGURE 2b- Aspen Apartments Delineation Map and Potential Contaminant Source Locations

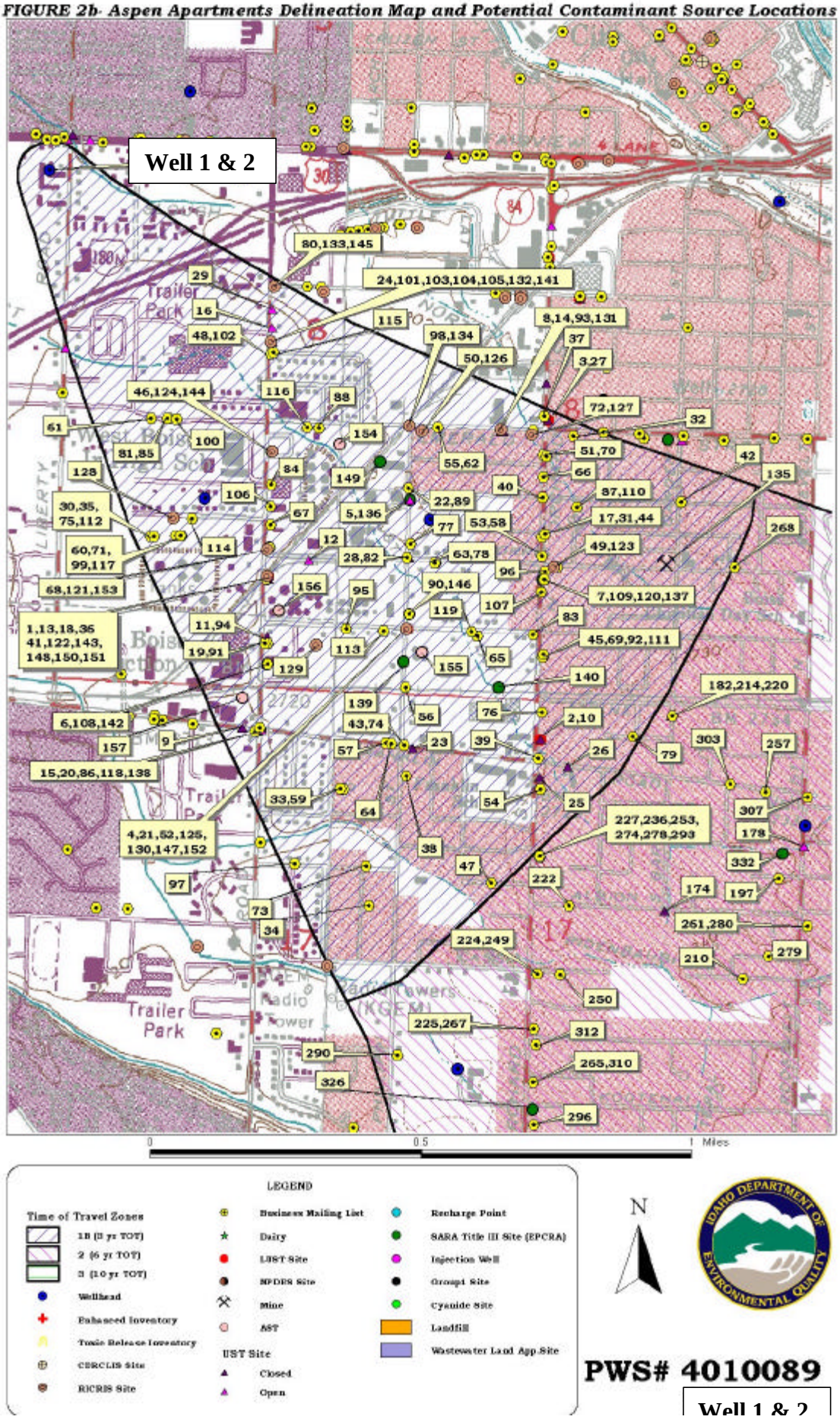
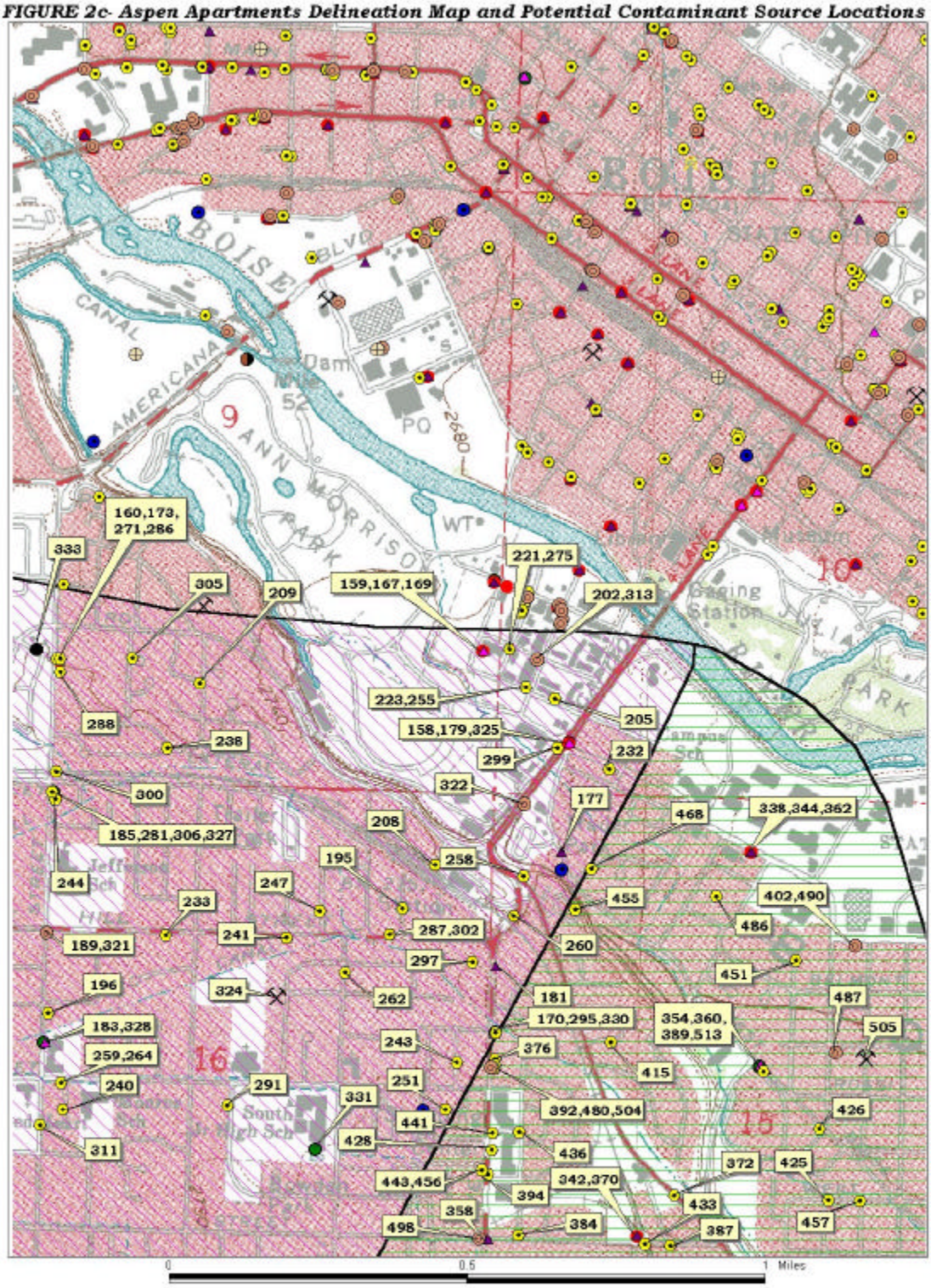


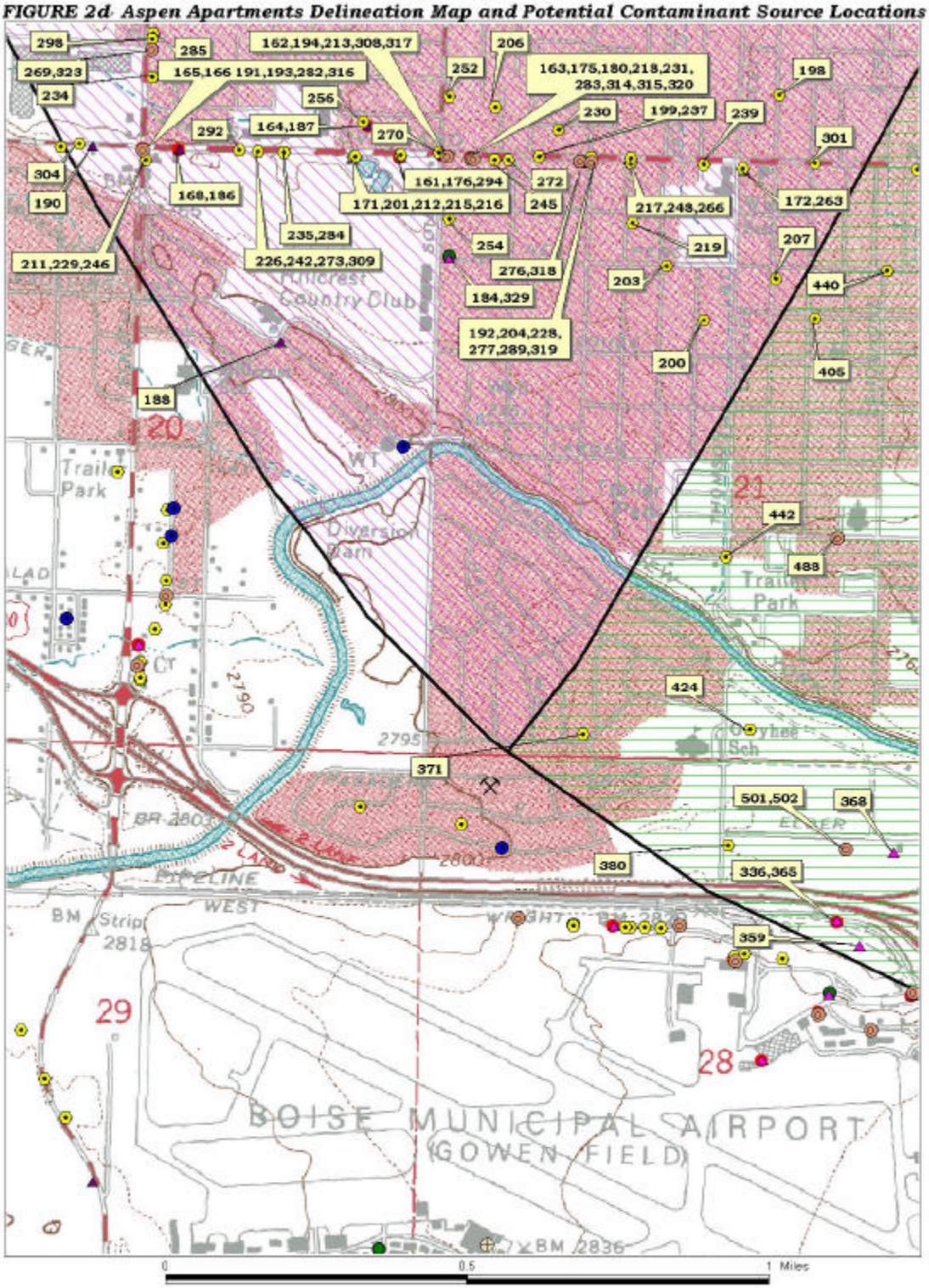
FIGURE 2c- Aspen Apartments Delineation Map and Potential Contaminant Source Locations



PWS# 4010089

Well 1 & 2

FIGURE 2d Aspen Apartments Delineation Map and Potential Contaminant Source Locations



LEGEND

Time of Travel Zones
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- Toxic Release Inventory
- CERCLIS Site
- RICRIS Site
- Business Mailing List
- Dairy
- LUST Site
- NPDES Site
- Mine
- AST
- UST Site
  - Closed
  - Open
- Recharge Point
- SARA Title III Site (EPCRA)
- Injection Well
- Groupd Site
- Cyanide Site
- Landfill
- Wastewater Land App.Site

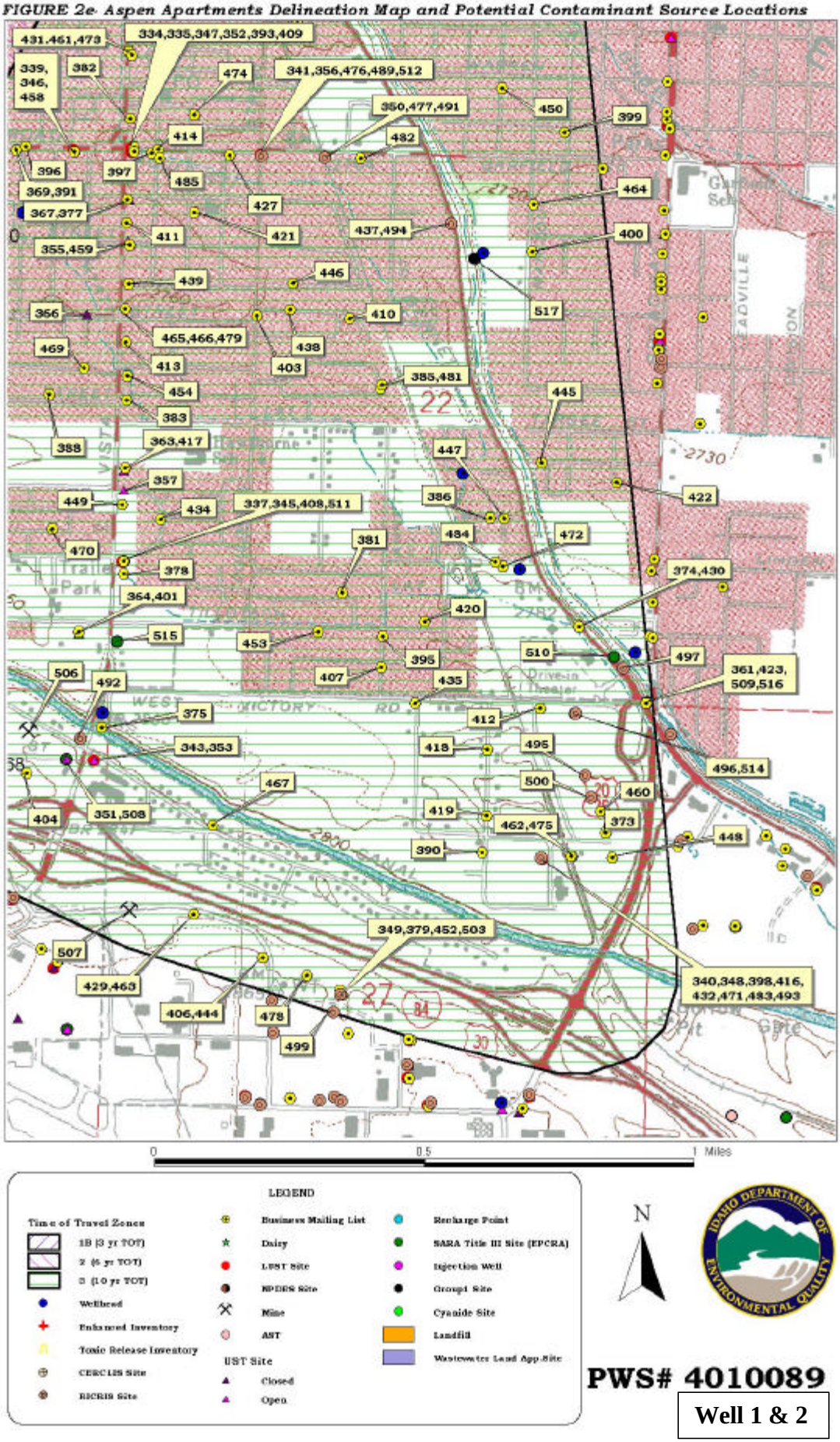
N

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 4010089

Well 1 & 2

FIGURE 2e- Aspen Apartments Delineation Map and Potential Contaminant Source Locations



PWS# 4010089

Well 1 & 2

Table 3. Aspen Apartments Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1, 13, 18, 36, 41, 122, 143, 148, 150, 151	Petroleum Distribution	0 - 3	Database Search	VOC, SOC
2, 10	Petroleum	0 - 3	Database Search	VOC, SOC
3, 27	Gas Station	0 - 3	Database Search	VOC, SOC
4, 21, 52, 125, 130, 147, 152	Petroleum Distribution	0 - 3	Database Search	VOC, SOC
5 ,136	Truck/Transporter	0 - 3	Database Search	VOC, SOC
9	UST	0 - 3	Database Search	VOC, SOC
12	UST	0 - 3	Database Search	VOC, SOC
16	UST	0 - 3	Database Search	VOC, SOC
17	Gas Station	0 - 3	Database Search	VOC, SOC
19	Lumber	0 - 3	Database Search	IOC, VOC, SOC
22	Unknown	0 - 3	Database Search	
23	UST	0 - 3	Database Search	VOC, SOC
25	Gas Station	0 - 3	Database Search	VOC, SOC
26	UST	0 - 3	Database Search	VOC, SOC
29	UST	0 - 3	Database Search	VOC, SOC
30,35,75,112	Heavy Metals, Leather Processing,Embossing	0 - 3	Database Search	IOC, VOC, SOC
31	Marking Devices (Manufacturers)	0 - 3	Database Search	VOC, SOC
32	Photographers-Portrait	0 - 3	Database Search	IOC, VOC
33	Lawn Maintenance	0 - 3	Database Search	IOC, VOC, SOC
34	Aircraft Servicing & Maintenance	0 - 3	Database Search	VOC, SOC
35	Janitor Service	0 - 3	Database Search	IOC, VOC, SOC
37	Printers	0 - 3	Database Search	IOC, VOC
38	Storage-Household & Commercial	0 - 3	Database Search	IOC, VOC, SOC
39	Automobile Repairing & Service	0 - 3	Database Search	VOC, SOC
40	Automobile Dealers	0 - 3	Database Search	VOC, SOC
42	Painters	0 - 3	Database Search	VOC
43, 74	Veterinarians	0 - 3	Database Search	IOC, VOC, Microbials
44	Paint-Retail	0 - 3	Database Search	VOC, SOC
45	Automobile Dealers	0 - 3	Database Search	VOC, SOC
46, 124, 144	Petroleum Storage	0 - 3	Database Search	VOC, SOC
47	Septic Tanks-Cleaning & Repairing	0 - 3	Database Search	IOC, Microbials
48, 102	Medical Center	0 - 3	Database Search	IOC, VOC, Microbials
49	Signs (Manufacturers)	0 - 3	Database Search	VOC, SOC
51	Fire Protection Equipment & Supplies	0 - 3	Database Search	IOC, VOC, SOC
53	General Contractors	0 - 3	Database Search	VOC, SOC
54	Cleaners	0 - 3	Database Search	VOC, SOC
56	Control Systems/Regulators	0 - 3	Database Search	VOC, SOC
57	Electric Equipment & Supplies	0 - 3	Database Search	VOC, SOC
58	Typesetting (Manufacturers)	0 - 3	Database Search	IOC, VOC
59	Window Cleaning	0 - 3	Database Search	VOC, SOC
61	Electric Equipment-Manufacturers	0 - 3	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
63	Optical Goods-Manufacturers	0 - 3	Database Search	
64	Publishers-Periodical	0 - 3	Database Search	IOC, VOC
65	Electric Equipment & Supplies	0 - 3	Database Search	VOC, SOC
66	Typesetting	0 - 3	Database Search	IOC, VOC
67	Petroleum Products	0 - 3	Database Search	VOC, SOC
70	Rental Service	0 - 3	Database Search	VOC, SOC
71	Floor Refinishing & Resurfacing \+	0 - 3	Database Search	VOC, SOC
72	Publishers	0 - 3	Database Search	IOC, VOC
73	General Contractors	0 - 3	Database Search	VOC, SOC
75	Candles-Manufacturers	0 - 3	Database Search	VOC
76	Leather Goods-Manufacturers	0 - 3	Database Search	VOC
77	Microfilming	0 - 3	Database Search	IOC, VOC
78	Screen Printing	0 - 3	Database Search	IOC, VOC
79	Automobile Body Shop	0 - 3	Database Search	VOC, SOC
83	Automobile Machine Shop	0 - 3	Database Search	IOC, VOC, SOC
84	General Contractors	0 - 3	Database Search	VOC, SOC
87	Home Sales	0 - 3	Database Search	VOC, SOC
88	Printers	0 - 3	Database Search	IOC, VOC
89	Plumbing Fixtures & Supplies	0 - 3	Database Search	VOC, SOC
91	Welding Supplies	0 - 3	Database Search	VOC, SOC
95	Electric Equipment & Supplies	0 - 3	Database Search	VOC, SOC
96	Laboratories-Dental	0 - 3	Database Search	VOC, SOC
97	Bicycles-Dealers	0 - 3	Database Search	VOC, SOC
99	Control Systems/Regulators-	0 - 3	Database Search	VOC, SOC
100	Building Contractors	0 - 3	Database Search	VOC, SOC
105	Newsletters	0 - 3	Database Search	IOC, VOC
106	Plumbing Fixtures & Supplies	0 - 3	Database Search	VOC, SOC
107	Photo Finishing	0 - 3	Database Search	IOC, VOC
110	Home Improvements	0 - 3	Database Search	IOC, VOC, SOC
112	Plating	0 - 3	Database Search	IOC
113	Laboratories-Medical	0 - 3	Database Search	IOC, Microbials
114	Stone Cutters	0 - 3	Database Search	VOC, SOC
115	Laboratories-Medical	0 - 3	Database Search	IOC, Microbials
116	Swimming Pool	0 - 3	Database Search	IOC, VOC
117	Microfilm Service	0 - 3	Database Search	IOC, VOC
119	Water Works Equipment & Supplies	0 - 3	Database Search	IOC, VOC, SOC
121	Freight Hauler	0 - 3	Database Search	VOC, SOC
123	Body Shop	0 - 3	Database Search	VOC, SOC
127	Environmental Service	0 - 3	Database Search	VOC, SOC
128	RCRA	0 - 3	Database Search	IOC, VOC, SOC
129	RCRA	0 - 3	Database Search	IOC, VOC, SOC
135	Sand & Gravel	0 - 3	Database Search	IOC, VOC, SOC
139	SARA	0 - 3	Database Search	VOC, SOC
140	SARA	0 - 3	Database Search	VOC, SOC
149	SARA	0 - 3	Database Search	VOC, SOC
154	AST	0 - 3	Database Search	VOC, SOC
155	AST	0 - 3	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
156	AST	0 - 3	Database Search	VOC, SOC
157	Fuel Oil	0 - 3	Database Search	VOC, SOC
11,94	Movers	0 - 3	Database Search	VOC, SOC
15,20,86,118,138	Gas Station, Laundry	0 - 3	Database Search	IOC, VOC, SOC
24,101,103,104,105 ,132,141	Hospital	0 - 3	Database Search	IOC, VOC, Microbials
28,82	Electrical Wholesaler	0 - 3	Database Search	VOC, SOC
50,126	Automobile Body	0 - 3	Database Search	VOC, SOC
55,62	Trucking-Heavy Hauling & Delivery	0 - 3	Database Search	VOC, SOC
6,108,142	Gas Station	0 - 3	Database Search	VOC, SOC
60	Electrical Power Systems-Maintenan	0 - 3	Database Search	VOC, SOC
68,153	Oils-Fuel (Wholesale)	0 - 3	Database Search	VOC, SOC
69,92,111	Veterinarians	0 - 3	Database Search	IOC, VOC, Microbials
7,109,120,137	Gas Station	0 - 3	Database Search	VOC, SOC
8,14,93,131	Recyclying	0 - 3	Database Search	IOC, VOC, SOC
80,133,145	Newspapers	0 - 3	Database Search	IOC, VOC
81,85	Laboratories-Medical	0 - 3	Database Search	IOC, Microbials
90,146	Oil Additives-Distributors	0 - 3	Database Search	VOC, SOC
98,134	Plumbing & Gas	0 - 3	Database Search	VOC, SOC
172	UST	3 - 6	Database Search	VOC, SOC
192	UST	3 - 6	Database Search	VOC, SOC
225	Winery	3 - 6	Database Search	IOC
227	Cleaners-Upholstery	3 - 6	Database Search	VOC, SOC
236	Excavating Contractors	3 - 6	Database Search	VOC, SOC
261	Industrial Equipment & Supplies	3 - 6	Database Search	VOC, SOC
267	Tree Service	3 - 6	Database Search	IOC, VOC, SOC
280	Trucking-Local Cartage	3 - 6	Database Search	VOC, SOC
298	Photographers-Portrait	3 - 6	Database Search	IOC, VOC
299	Buses-Charter & Rental	3 - 6	Database Search	VOC, SOC
300	Copying Machines & Supplies	3 - 6	Database Search	IOC, VOC, SOC
301	Publisher	3 - 6	Database Search	IOC, VOC
303	Lawn Maintenance	3 - 6	Database Search	IOC, VOC, SOC
304	Barbers Equipment & Supplies	3 - 6	Database Search	IOC, VOC
305	Excavating Contractors	3 - 6	Database Search	VOC, SOC
306	Truck Renting & Leasing	3 - 6	Database Search	VOC, SOC
307	Truck Renting & Leasing	3 - 6	Database Search	VOC, SOC
308	Truck Renting & Leasing	3 - 6	Database Search	VOC, SOC
310	General Contractors	3 - 6	Database Search	VOC, SOC
311	Delivery Service	3 - 6	Database Search	VOC, SOC
312	General Contractors	3 - 6	Database Search	VOC, SOC
322	RCRA	3 - 6	Database Search	IOC, VOC, SOC
332	SARA	3 - 6	Database Search	IOC, Microbials
160,173,271,286	Cemetery	3 - 6	Database Search	IOC, Microbials
170,295,330	Gas Station	3 - 6	Database Search	VOC, SOC
182,214,220	Wrecker Service	3 - 6	Database Search	VOC, SOC
189,321	Gas Station	3 - 6	Database Search	VOC, SOC
224,249	Automobile Repairing & Service	3 - 6	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
253,274,278,293	Building Contractors	3 - 6	Database Search	VOC, SOC
269,323	Dry Cleaners	3 - 6	Database Search	VOC, SOC
287,302	Publisher	3 - 6	Database Search	IOC, VOC
334	LUST	6 - 10	Database Search	VOC, SOC
347	UST	6 - 10	Database Search	VOC, SOC
351	UST	6 - 10	Database Search	VOC, SOC
355	Gas Station	6 - 10	Database Search	VOC, SOC
356	UST	6 - 10	Database Search	VOC, SOC
357	UST	6 - 10	Database Search	VOC, SOC
358	UST	6 - 10	Database Search	VOC, SOC
359	Rental Company	6 - 10	Database Search	VOC, SOC
363	Gas Station	6 - 10	Database Search	VOC, SOC
366	UST	6 - 10	Database Search	VOC, SOC
368	UST	6 - 10	Database Search	VOC, SOC
371	Contractor	6 - 10	Database Search	VOC, SOC
372	Printing Equipment-Repairing	6 - 10	Database Search	IOC, VOC, SOC
373	Movers	6 - 10	Database Search	VOC, SOC
375	Semiconductor Devices	6 - 10	Database Search	VOC, SOC
377	Automobile Repairing & Service	6 - 10	Database Search	VOC, SOC
378	Automobile Parts & Supplies-Retail	6 - 10	Database Search	VOC, SOC
380	General Contractors	6 - 10	Database Search	VOC, SOC
381	Steel Erectors	6 - 10	Database Search	VOC, SOC
382	Dry Cleaners	6 - 10	Database Search	VOC, SOC
384	General Contractors	6 - 10	Database Search	VOC, SOC
385	Landscape Contractors	6 - 10	Database Search	IOC, VOC, SOC
386	Contractors-Equipment & Supplies	6 - 10	Database Search	VOC, SOC
387	Automobile Radiator-Repairing	6 - 10	Database Search	IOC, VOC, SOC
388	Tree Service	6 - 10	Database Search	IOC, VOC, SOC
390	Recreational Vehicles-Storage	6 - 10	Database Search	VOC, SOC
392	Tire-Dealers	6 - 10	Database Search	IOC, VOC, SOC
395	Lawn Maintenance	6 - 10	Database Search	IOC, VOC, SOC
397	Newspapers (Publishers)	6 - 10	Database Search	IOC, VOC
398	Machine Shops	6 - 10	Database Search	VOC, SOC
400	Lawn Maintenance	6 - 10	Database Search	IOC, VOC, SOC
403	Contractors	6 - 10	Database Search	VOC, SOC
404	Conveyors & Conveying Equipment	6 - 10	Database Search	VOC, SOC
405	Landscape Contractors	6 - 10	Database Search	IOC, VOC, SOC
407	Landscape Contractors	6 - 10	Database Search	VOC, SOC
410	Photographs-Stock	6 - 10	Database Search	IOC, VOC
411	Automobile Dealers	6 - 10	Database Search	VOC, SOC
412	Storage-Household & Commercial	6 - 10	Database Search	IOC, VOC, SOC
413	Floor Refinishing & Resurfacing	6 - 10	Database Search	VOC, SOC
414	Automobile Renting & Leasing	6 - 10	Database Search	VOC, SOC
415	Landscape Contractors	6 - 10	Database Search	IOC, VOC, SOC
416	General Contractors	6 - 10	Database Search	VOC, SOC
420	Washers-Pressure	6 - 10	Database Search	VOC, SOC
421	Lawn Mower Repair	6 - 10	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
422	Floor Refinishing & Resurfacing	6 - 10	Database Search	VOC, SOC
424	Oils-Petroleum-Retail	6 - 10	Database Search	VOC, SOC
425	Landscape Contractors	6 - 10	Database Search	IOC, VOC, SOC
426	Remodeling/Repairing	6 - 10	Database Search	VOC, SOC
427	Automobile Electric Service	6 - 10	Database Search	VOC, SOC
428	Photographic Equip & Supplies	6 - 10	Database Search	IOC, VOC
432	Crane Service	6 - 10	Database Search	VOC, SOC
433	Automobile Repairing & Service	6 - 10	Database Search	VOC, SOC
434	Tree Service	6 - 10	Database Search	IOC, VOC, SOC
436	Janitor Service	6 - 10	Database Search	IOC, VOC, SOC
438	Photographers-Commercial	6 - 10	Database Search	IOC, VOC
439	Electric Equipment-Manufacturers	6 - 10	Database Search	VOC, SOC
440	Pest Control	6 - 10	Database Search	IOC, VOC, SOC
442	Printers	6 - 10	Database Search	IOC, VOC
443	Printers	6 - 10	Database Search	IOC, VOC
445	Janitor Service	6 - 10	Database Search	IOC, VOC, SOC
446	Janitor Service	6 - 10	Database Search	IOC, VOC, SOC
447	Excavating Contractors	6 - 10	Database Search	VOC, SOC
448	Roofing Contractors	6 - 10	Database Search	VOC, SOC
449	General Contractors	6 - 10	Database Search	VOC, SOC
450	General Contractors	6 - 10	Database Search	VOC, SOC
451	Lawn Maintenance	6 - 10	Database Search	IOC, VOC, SOC
452	Campground	6 - 10	Database Search	IOC, VOC, SOC, Microbials
453	Multimedia (Manufacturers)	6 - 10	Database Search	IOC, VOC
454	Office Machines NEC	6 - 10	Database Search	IOC, VOC, SOC
455	Photographers-Portrait	6 - 10	Database Search	IOC, VOC
456	Washers-Pressure	6 - 10	Database Search	IOC, VOC, SOC
457	Painters	6 - 10	Database Search	VOC, SOC
458	Automobile Dealers	6 - 10	Database Search	VOC, SOC
459	Automobile Dealers	6 - 10	Database Search	VOC, SOC
460	Storage-Household & Commercial	6 - 10	Database Search	IOC, VOC, SOC
462	General Contractors	6 - 10	Database Search	VOC, SOC
464	General Contractors	6 - 10	Database Search	VOC, SOC
468	Landscape Contractors	6 - 10	Database Search	IOC, VOC, SOC
469	Painters	6 - 10	Database Search	VOC, SOC
470	General Contractors	6 - 10	Database Search	VOC, SOC
471	Contractors	6 - 10	Database Search	VOC, SOC
472	Storage-Household & Commercial	6 - 10	Database Search	IOC, VOC, SOC, Microbials
473	General Contractors	6 - 10	Database Search	VOC, SOC
474	General Contractors	6 - 10	Database Search	VOC, SOC
475	Truck-Painting & Lettering	6 - 10	Database Search	VOC, SOC
476	Printer	6 - 10	Database Search	IOC, VOC
477	Well Drilling	6 - 10	Database Search	IOC, VOC, SOC
478	Livestock Auction Markets	6 - 10	Database Search	IOC, Microbials
480	General Contractors	6 - 10	Database Search	VOC, SOC
482	Floor Refinishing & Resurfacing	6 - 10	Database Search	VOC, SOC
483	Dredging	6 - 10	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
485	Typesetting	6 - 10	Database Search	IOC, VOC
486	Painters	6 - 10	Database Search	VOC, SOC
487	RCRA	6 - 10	Database Search	IOC, VOC, SOC
488	RCRA	6 - 10	Database Search	IOC, VOC, SOC
492	RCRA	6 - 10	Database Search	IOC, VOC, SOC
497	RCRA	6 - 10	Database Search	IOC, VOC, SOC
498	Dry Cleaners	6 - 10	Database Search	VOC, SOC
499	RCRA	6 - 10	Database Search	VOC, SOC
500	RCRA	6 - 10	Database Search	VOC, SOC
504	Dry Cleaners	6 - 10	Database Search	VOC, SOC
505	Gravel Pit	6 - 10	Database Search	VOC, SOC
506	Gravel Pit	6 - 10	Database Search	VOC, SOC
507	Gravel Pit	6 - 10	Database Search	VOC, SOC
508	SARA	6 - 10	Database Search	IOC, VOC, SOC
510	SARA	6 - 10	Database Search	VOC, SOC
515	SARA	6 - 10	Database Search	VOC, SOC
517	Group 1	6 - 10	Database Search	VOC, SOC
334,335,347,352,393,409	UST/LUST	6 - 10	Database Search	VOC, SOC
336,365	Car Rental	6 - 10	Database Search	VOC, SOC
337,345,408,511	Gas Station	6 - 10	Database Search	VOC, SOC
338,344,362	UST/LUST	6 - 10	Database Search	VOC, SOC
339,346	LUST	6 - 10	Database Search	VOC, SOC
340,348,419,493	UST/LUST	6 - 10	Database Search	VOC, SOC
341,356,489,512	Gas Stations	6 - 10	Database Search	VOC, SOC
342,370	Railroad	6 - 10	Database Search	VOC, SOC
343,353	Gas Station	6 - 10	Database Search	VOC, SOC
349,379,503	UST/LUST	6 - 10	Database Search	VOC, SOC
350,491	UST	6 - 10	Database Search	VOC, SOC
354,360,389,513	Service Stations	6 - 10	Database Search	VOC, SOC
361,423,509,516	Petroleum Distributor	6 - 10	Database Search	VOC, SOC
364,401	Boat Repairing	6 - 10	Database Search	VOC, SOC
367,377	UST	6 - 10	Database Search	VOC, SOC
369,391	Rental Company	6 - 10	Database Search	VOC, SOC
402,490	Automobile Body	6 - 10	Database Search	VOC, SOC
406,444	Log Cabins Homes & Buildings	6 - 10	Database Search	IOC, VOC, SOC
429,463	Automobile Renting & Leasing	6 - 10	Database Search	VOC, SOC
437,494	Printers	6 - 10	Database Search	IOC, VOC
465,466,479	Veterinarian	6 - 10	Database Search	IOC,VOC, Microbials
495,496,514	RCRA	6 - 10	Database Search	IOC, VOC, SOC
501,502	RCRA	6 - 10	Database Search	IOC, VOC, SOC

[1] Find Source Description definitions on page 13

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

NOTE: The site number in this table corresponds to Figure 2b-2e.

Attachment B

Aspen Apartments
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : ASPEN APARTMENTS Well# : ASPEN 1 WELL #1
Public Water System Number 4010089 3/19/02 7:20:03 AM

1. System Construction		SCORE				
Drill Date	6/1/70					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	1999				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		4				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		6				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL		2	2	2	2
Farm chemical use high	NO		0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES		NO	NO	YES	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A			2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES		91	98	993	9
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or	YES		10	25	10	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES		0	2	0	0
Land use Zone 1B	Less Than 25% Agricultural Land		0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B			12	14	12	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES		2	2	2	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Land Use Zone II	Less than 25% Agricultural Land		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II			3	3	3	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES		1	1	1	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO		0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III			2	2	2	0
Cumulative Potential Contaminant / Land Use Score			19	21	19	10

4. Final Susceptibility Source Score	14	14	14	14
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report Public Water System Name : ASPEN APARTMENTS Well# : WELL #2

Public Water System Number 4010089 3/19/02 7:20:03 AM

1. System Construction		SCORE				
Drill Date		Unknown				
Driller Log Available		NO				
Sanitary Survey (if yes, indicate date of last survey)		YES	1999			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		NO	2			
Highest production 100 feet below static water level		NO	1			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		4			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high		NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	91	980	9930	9
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	10	25	10	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	0	2	0	0
Land use Zone 1B	Less Than 25% Agricultural Land		0	0	0	0
	Total Potential Contaminant Source / Land Use Score - Zone 1B		12	14	12	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land		0	0	0	
	Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score			19	21	19	10

4. Final Susceptibility Source Score	14	14	14	14
5. Final Well Ranking	High	High	High	High